Notice of Allowability	Application No.	Applicant(s)	
	10/730,675	SHIMADA, YUUSUKE	
	Examiner	Art Unit	
	Haresh Patel	2154	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *12/8/03*.

2. ☒ The allowed claim(s) is/are *1-8*.

3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☒ All b) ☐ Some* c) ☐ None of the:
      1. ☒ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date 12/8/03, 10/9/07
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date *10/26/07* .
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

Haresh Patel

EXAMINER'S AMENDMENT

1. Claims 1-8 are subject to examination.

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

3. Authorization for this examiner's amendment was given in a telephone interview with Mr. Burns Patrick on October 26, 2007.

Amendments to the Specification

4. Please replace title of the specification (including at page 1, line 1) with the following:

--Load balancing server to determine optimum value of number of permanent connections with server--

5. At page 1, line 4 of the specification, please insert, --CROSS-REFERENCE TO RELATED APPLICATIONS: This application claims the priority of Japan Application No. 2002-358154 12/10/2002, under 35 U.S.C. 119.--

Amendments to the Claims

6. Please amend claim 1 as attached.

Priority

7. Applicant's claim for foreign priority, Japan 2002-358154, under 35 U.S.C. 119(a)-(d) or (f), is acknowledged.

Drawings

8. The figures 1-12 submitted on 12/8/03 are acknowledged.

Information Disclosure Statement

9. An initialed and dated copy of the applicant's IDS form 1449, paper dated 12/8/03 and 10/9/07, is attached to the instant Office action.

Allowable Subject Matter

10. Claims 1-8 are allowed.

11. The following is an examiner's statement of reasons for allowance:

Applicant's invention discloses a load balancing program / method / recording medium of a server or an apparatus between a client and another server as shown below:

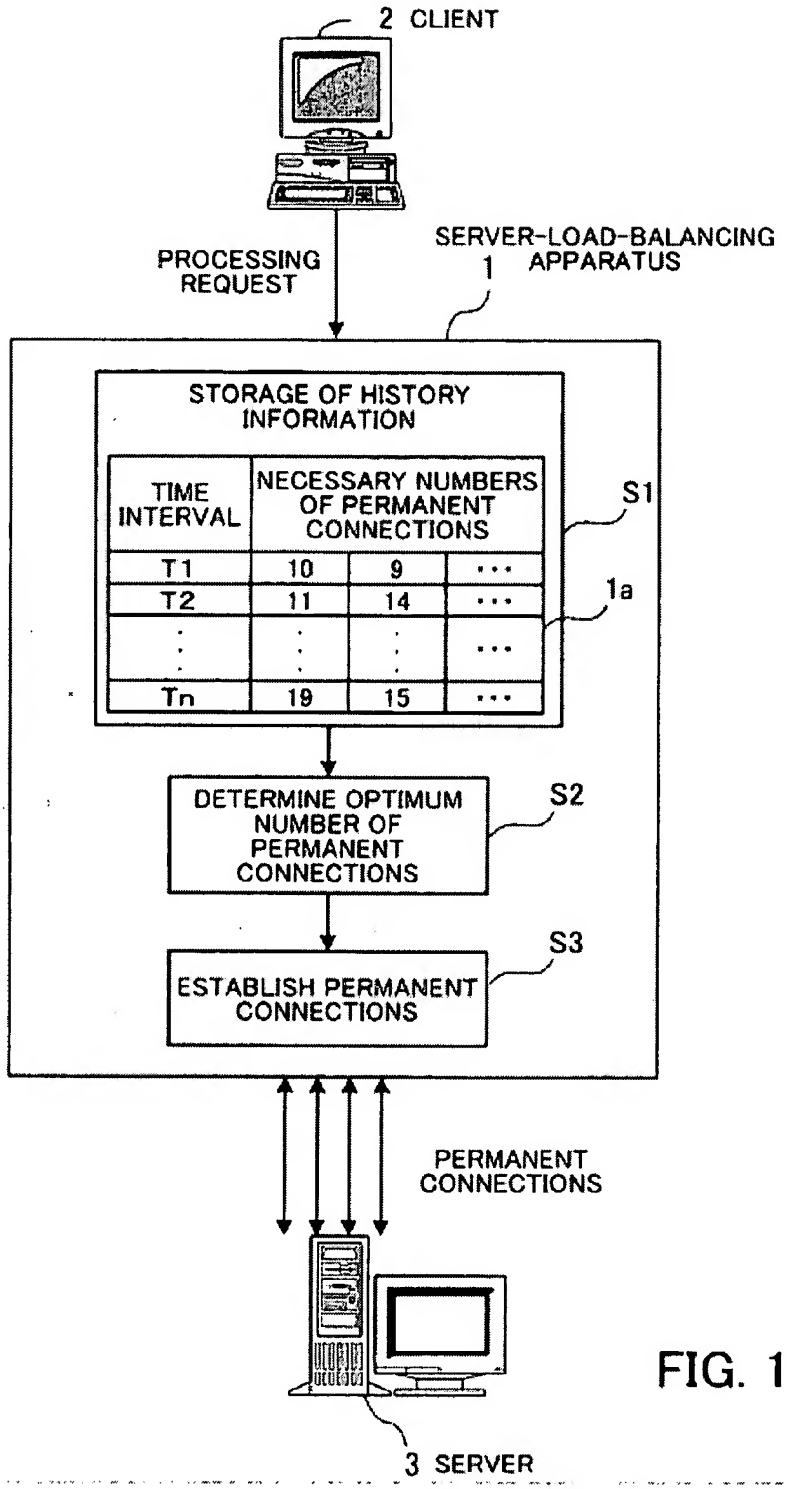
2 CLIENT
PROCESSING REQUEST
SERVER-LOAD-BALANCING APPARATUS
1
STORAGE OF HISTORY INFORMATION
TIME INTERVAL
NECESSARY NUMBERS OF PERMANENT CONNECTIONS
S1
T1 10 9 ...
T2 11 14 ...
Tn 19 15 ...
1a
DETERMINE OPTIMUM NUMBER OF PERMANENT CONNECTIONS
S2
ESTABLISH PERMANENT CONNECTIONS
S3
PERMANENT CONNECTIONS
3 SERVER

FIG. 1

As per the claimed invention and s shown in the above figure, step S1, the history information contains time intervals and necessary numbers of permanent connections. Step S2 determines optimum number of permanent connects with the server (item 3). Step S3 establishes permanent connections based on coming period (future) that is divided and respective optimum value for respective time interval as shown below.

141 PERMANENT-CONNECTION-NUMBER HISTORY TABLE

TIME INTERVAL (T)	NECESSARY NUMBERS OF PERMANENT CONNECTIONS							OPTIMUM NUMBER OF PERMANENT CONNECTIONS
	1	2	3	4	5	6	7	
0~1	12	10	9	13	9	8	14	11
1~2	11	8	6	11	7	14	6	9
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
23~24	14	24	15	16	21	19	17	18

As per the background of the invention and the cited arts of the PTO-Form 892 load balancing server, permanent connection among servers, storing history information of the connections is well known in the art, i.e., the number of permanent connections preestablished for each server is defined in advance in each server-load- balancing apparatus. When the service is started, each server-load-balancing apparatus establishes permanent connections corresponding to the predefined number. Thereafter, the established permanent connections are maintained during operation of the system. Therefore, the server-load-balancing apparatus can send each processing request to a server to which the processing request is to be distributed,

immediately after the server is determined (without execution of processing for establishing a connection). As explained above, when permanent connections are preestablished, processing requests sent from clients can be promptly distributed among clients. The processing for establishing permanent connections has been already realized as a function of web acceleration (see, for example, the Manual of Operation for IPCOM i00, P3NK-E332- 02, pp. 52, Fujitsu Ltd., May 2002). However, according to the conventional techniques, it is difficult to appropriately set the number of permanent connections. That is, in practice, the appropriate number of permanent connections varies with operational conditions of the system. Therefore, when actual operational conditions are different from expected operational conditions, permanent connections become superfluous or insufficient. In the case where the permanent connections are insufficient, even when the server-load-balancing apparatus receives a request from a client, none of permanent connections to a server to which the request is to be transmitted may be available. When no permanent connection to the server to which a request is to be transmitted is available, it is necessary to establish a new connection, or wait until at least one of the permanent connections becomes available. Therefore, when shortage of permanent connections frequently occurs, the promptness of responses to processing requests is reduced. In addition, when the number of the permanent connections is too great, a great number of permanent connections are unused, and therefore resources such as memories in the server-load-balancing apparatus and each server are uselessly occupied.

However, a novel way of utilizing the claimed determining step for the respective optimum value of the permanent connections and to establishing permanent connection between

load balancing server and another server along with the other claimed features of the claim is not disclosed in the prior arts. Therefore, the claims are allowable over the art of record.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Haresh Patel whose telephone number is (571) 272-3973. The examiner can normally be reached on Monday, Tuesday, Thursday and Friday from 10:00 am to 8:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn, can be reached at (571) 272-1915. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

HARESH PATEL

PRIMARY EXAMINER

October 27, 2007

Claim 1 (currently amended): A server-load-balancing program stored in a computer readable recording medium which is executed by a computer and makes said computer perform a process for establishing a permanent connection between the computer and a server in advance, and requesting the server to execute a processing request received from a client, by using the permanent connection, said process comprises the steps of:

(a) storing history information indicating conditions of use of at least one permanent connection in each of a plurality of first time intervals into which each of at least one preceding period is divided;

(b) determining an optimum value of the number of at least one permanent connection to be established in each of a plurality of second time intervals into which a coming period is divided, based on said history information, where the plurality of second time intervals correspond to the plurality of first time intervals, respectively; and

(c) establishing between said computer and said server said at least one permanent connection in each of said plurality of second time intervals in the coming period so that the number of the at least one permanent connection in each of the plurality of second time intervals is equal to said optimum value.